2025

AAR M-1003 Quality Assurance Audit Handbook



The Association of American Railroads

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Revision: D

Public

Revision History

Revision	Type of Revision	Revision Date
Original	Original Manual Revision	MAR 2020
A	Revised Mandatory Elements, Various sections updated to include current information	JAN 2022
B	Revised Mandatory Elements, Various sections updated to include current information	JAN 2023
C	Revised Mandatory Elements, Various sections updated to include current information	JAN 2024
D	Revised Mandatory Elements, Removed Facility Profile Data Sheet, Various sections updated to include current information	JAN 2025

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Section 1 – Introduction

This handbook is a controlled document and may be updated periodically as noted in the revision history section.

AAR Quality Assurance (QA) Program: Mission and Management

The Quality Assurance Committee's mission is to promote continuous improvement, reliability and durability of materials, products, and services for use in North American Railway Interchange with the goal of ensuring safety and operational integrity.

The goal of the QA Program is to enhance the safety of the North American rail interchange system by maintaining a consistent quality standard. The QA audit process is intended to verify that facilities are maintaining their QA Program in accordance with the M-1003 standard, and to assist facilities to meet that standard where necessary.

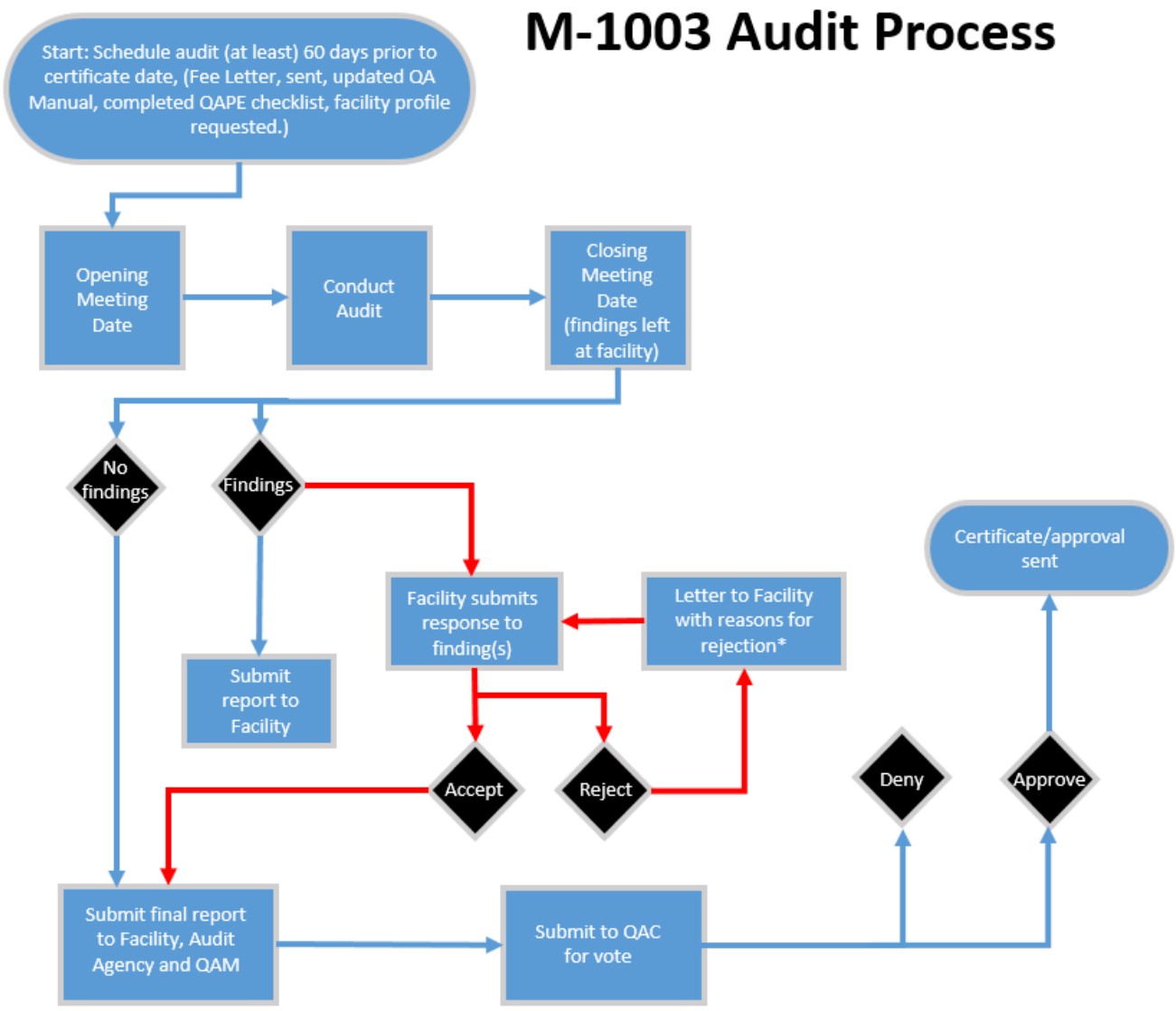
The AAR QA Program requirements are specified in the AAR Manual of Standards and Recommended Practices ("MSRP"), Section J, Specification for Quality Assurance (Specification M-1003).

The QA Program is managed and operated by AAR's wholly owned subsidiary MxV Rail, using auditors employed by or under contract with MxV Rail. The QA Program is subject to general supervision and oversight by AAR, largely through AAR's Quality Assurance Committee ("QAC"). However, MxV Rail establishes the job-related requirements for QA auditors, whether directly as employees of MxV Rail or by contract.

M-1003 Quality Assurance Audit Objective is to verify the facility has implemented a QA program that meets or exceeds the requirements of AAR Manual of Standards and Recommended Practices ("MSRP"), Section J, Specification for Quality Assurance (Specification M-1003).

Section 2 - Planning and Scheduling Audit Requirements

AAR QAC Members may attend and participate in audits, and may evaluate AAR Accredited Auditors. Please reference flowchart below for audit process.



Section 3 - Selecting Audit Criteria

Elements 2.4, 2.6, 2.15, & 2.22 must be audited at every audit in 2025 as determined by the QAC.

When selecting the criteria to audit, the QAC has established the following order of priorities:

1) Initial Certification or Recertification will consist of all twenty-four elements as defined within Chapter Two of the M-1003 specification.
2) Compliance audits consist of six to eight elements. In most cases, the auditor should target auditing eight elements. Selection criteria for the six to eight elements shall include 1) the four elements identified above mandated by the QAC and 2) an additional two to four elements selected following the guidelines listed below or as a result of a facility tour or walk through. Selection guidelines include:
    a. Previous Audit Findings - Audit those elements that resulted in findings during the last audit.
    b. Added Activity Code - When an activity is added to an existing M-1003 certification, the auditor must audit at least Inspection and Test Plan, Measuring and Test, Document Control, Training, and Quality Records, as applicable to the new activity.
    c. Material Nonconformance Report Data - Use Material Nonconformance Reports to determine any relationship to breakdowns in selected elements of the Quality Program.
    d. Previous Criteria Evaluated - Typically, do not audit the same elements year after year, unless regular findings have been identified.
    e. Section J/Manual Revisions - Audit for a facility's inclusion of new Program elements. Audit revisions to the facility's manual.
    f. Comments from File - Audit for concerns raised during previous audits.

In addition to the above mandatory elements, auditors are to verify the following at every audit:

1) Current subscription to AAR Circular Letters (2.3.5)

2) Latest revision of Section J (2.3.6)

3) Any applicable technical approvals are current (2.15.12)

4) Chapter 7 nonconformance reporting contact (2.18.3)

Section 4 - Opening and Closing Meetings

The auditor must use the opening and closing meeting checklist to annotate any questions, concerns, etc. that were presented during the meetings.

The goal of the opening meeting is to build rapport with the auditee, provide an overview of the audit objectives, an outline of how the audit will be conducted and answer any questions.

The goal of the closing meeting is to review the results of the audit, including any findings noted during the course of the audit and set expectations for responses, as well as to advise the auditee of the next steps in the process. Additionally, the auditor should inform the facility of good practices observed during the audit and answer any outstanding questions the auditee may have.

During the closing meeting, auditors are to inform the facility contacts to complete the auditors survey via the QR-code included in the audit report once received.

Auditors are to mention the following statement: **Please complete this 7-question survey about your audit. The results are not shared with the auditor, they are used by the Quality Assurance Committee to identify opportunities for improvement.**

Section 5 - Five Step Problem Solving / Root Cause and Corrective Action (RCCA) Process

When an audit or component failure reveals opportunities for improvement, the following five steps are an excellent way to plan, develop, and implement a corrective action plan to contain and prevent the reoccurrence of the failure mode.

1. DEFINE THE DEFECT OR NONCONFORMANCE (PROBLEM DESCRIPTION)

A problem well defined is a problem half solved. It is critical to not include any implied causes or solutions in the problem statement in order to not track thinking in only one direction.

- Have the characteristics of the problem been identified? (who, what, where, when, why, how, and how many)
- Have patterns or trends been identified? (within unit, within lot, and over time)
- Has the quality or functional requirements/characteristics been identified?
- Has a comparative (what is different, what is the same) analysis been performed?
- Can the problem be reproduced?
- Can the complete statement pass a group "so what" test?
- State the problem as a specific nonconformance.
- When must the problem be resolved?

2. CONTAIN THE DEFECT OR NONCONFORMANCE

This is not problem elimination; this is just fixing the problem at hand. It's where we traditionally stop when dealing with nonconformance - but - there are three more steps.

- Have the appropriate containment actions been identified to shield the customer and the facility from the problem until corrective action is in place?
- Deal with the situation at hand (Instruct the employee, rework the bad part, etc.) until a root cause can be identified and corrective action implemented.
- When applicable, have appropriate containment actions been identified at a supplier to shield the company from the problem until corrective action is in place?
- Do containment actions address all potential manufacturing locations and distribution points?
- When necessary, has Sales and/or Customer Support been informed of the problem condition?
- Have containment actions been verified for effectiveness?

3. IDENTIFY THE ROOT CAUSE (ROOT CAUSE ANALYSIS)

This is the original reason a nonconformance exists. (When we pull weeds if we just pull the leaves and leave the root structure in place, the weed will grow back. Pull the tap root and the weed will be eliminated.)

- Have the five "whys" been used to identify potential root cause?
- Has a cause and effect diagram been developed to identify potential root causes?
- Have all potential root causes been identified and prioritized?
- Have the most likely causes been analyzed and tested?
- Has cause vs. effect been observed, preferably using statistical methods?

4. CORRECTIVE ACTION PLANNING AND IMPLEMENTATION

This stage identifies and implements actions to prevent the reoccurrence of the defect or nonconformance. Retrain or reinstruct the craftsman is not corrective action.

- Have balanced (technical, economical, timely, and mistake proof) corrective actions been identified and rank ordered?
- Have the "pro and cons" of the corrective actions been identified?
- Has the best-balanced corrective action been selected?
- Have actions, milestones, target dates and resources been properly identified and allocated?
- Has Sales and/or Customer Support been informed of the corrective action?
- Has information for future problem prevention been conveyed to the appropriate personnel and/or departments?
- Has a process or system change, if necessary, been identified and defined?
- Has verification of corrective actions been planned?
- Other items for consideration in the corrective action planning and implementation stage include:
    - Is the action directed toward a specific root cause?
    - Is the action directed toward the elimination of the root cause?
    - What process will be changed?
    - What specific nonconformance will be eliminated?
    - Have the criteria for solution - been defined?
    - Who will specify the change?
    - When will the change be implemented?
    - How will the change be documented?
    - Who must be informed and concur with the change?

5. CORRECTIVE ACTION VERIFICATION (FOLLOW-UP)

This step verifies that the corrective action implemented has been effective in preventing the reoccurrence of the defect or nonconformance.

- Has the measurement or test system validated corrective action effectiveness?
- Have process control activities been established, implemented and verified?
- Is there evidence that process or system activities have been changed or followed correctly?

Section 6 - Termination of an Audit

If an audit must be terminated, the auditor must follow the requirements as stated in Section-J, 3.10 Audit Termination or Rescheduling.

The auditor must contact QAM at QA@aar.com and their management for permission to terminate the Audit. The Auditor is to use their own discretion if unable to reach their management. An Audit Termination Report Form will be completed and filed with copy to QAM and audit agency management.

Section 7 - Material Nonconformance Reports

7.1 Nonconformance Reports should be used by the auditor to assess possible connections between product deficiencies and breakdowns in the facility's quality assurance program. Report descriptions and the number of occurrences should be used in this determination.

- Auditor is required to go online to http://aar.iirx.net to review the facility's Chapter 7 forms
- Auditor must verify the facility is complying with all Chapter 7 requirements of AAR M-1003
- Auditor must verify the facility is properly using Forms QA-7.1, QA-7.2 and QA-7.3 as detailed in Chapter 7 of AAR M-1003
- Auditor must verify that records are maintained for three years as required by Chapter 7 of AAR M-1003

If a facility is not following the above requirements the auditor must write a finding against the facility and include the applicable objective evidence on AAFR.

Section 8 - Reserved

Section 9 - Audit Fees

Audit Fees can be found in Appendix E of the Office Manual of the AAR Interchange Rules. Go to link below.

https://aarpublications.com/field-and-office-manuals.html

Section 10 - AAR Auditor Requirements

Auditor Requirements

During the audit:

- All Auditors must comply with the facility's safety and PPE requirements.

- Auditors must dress appropriately and conduct themselves in a professional manner.

New Auditors cannot audit their prior company's facilities for a minimum of 1-year.

Expected qualities of all auditors:

- Communication must be clear and concise
- Has personal integrity
- Open Minded
- Responsible
- Consistent
- Cooperative
- Constructive
- Adaptable
- Persistent

Section 11 – Useful Links

AAR M-1003 Frequently Asked Questions

http://www.aar.com/standards/FAQ.html

AAR M-1003 Certified Company Registry

http://www.aar.com/standards/M-1003_registry.html

AAR M-1003 Certification Online Application

http://www.aar.com/standards/m1003-application.html

AAR M-1003 Section J Specification for Quality Assurance

http://www.aar.com/standards/publications.html

AAR M-1003 Quality Assurance Training Classes

http://www.aar.com/standards/FAQ.html#training

AAR M-1003 Online Material Nonconformance Reporting System (Chapter 7)

http://www.aar.com/standards/FAQ.html#chapter7

AAR M-1003 Previous QA Newsletters

http://www.aar.com/standards/FAQ.html

AAR Purchase Publications

http://www.aar.com/standards/publications.html

AAR Circular Letters

https://my.aar.org/circulars

MxV Rail Home Page

https://www.mxvrail.com/